

# DOD/VA Asthma Guideline Implementation

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# Key Contributors to the Guidelines

- So many important contributors from all the military services and the VA
- Special thanks to:
  - **Kathy Dolter and Sid Atkinson - MEDCOM**
  - **Ted Carter, Ron Moody, Jill Yanchick - Army**
  - **John Mitchell - Air Force**
  - **John McQueston, Henry Wojtczak - Navy**
  - **Peter Almenoff - VHA**
  - **Shan Cretin, Mayde Rosen - RAND**

# Evidence-Based Care

## Doing More Better and Differently

- The Future
- Success
  - OTSG Support
  - Integrated Health Care System
  - Best people in the world
- Improved patient care

# Development of the Guidelines: Time Course

- General Blank requests MEDCOM to produce clinical practice guidelines for the Army
- March '98: First Army meeting
- August '98: a Tri-service group initiates guideline
- Nov '98: VA joins a large Tri-service group of specialists and primary care providers

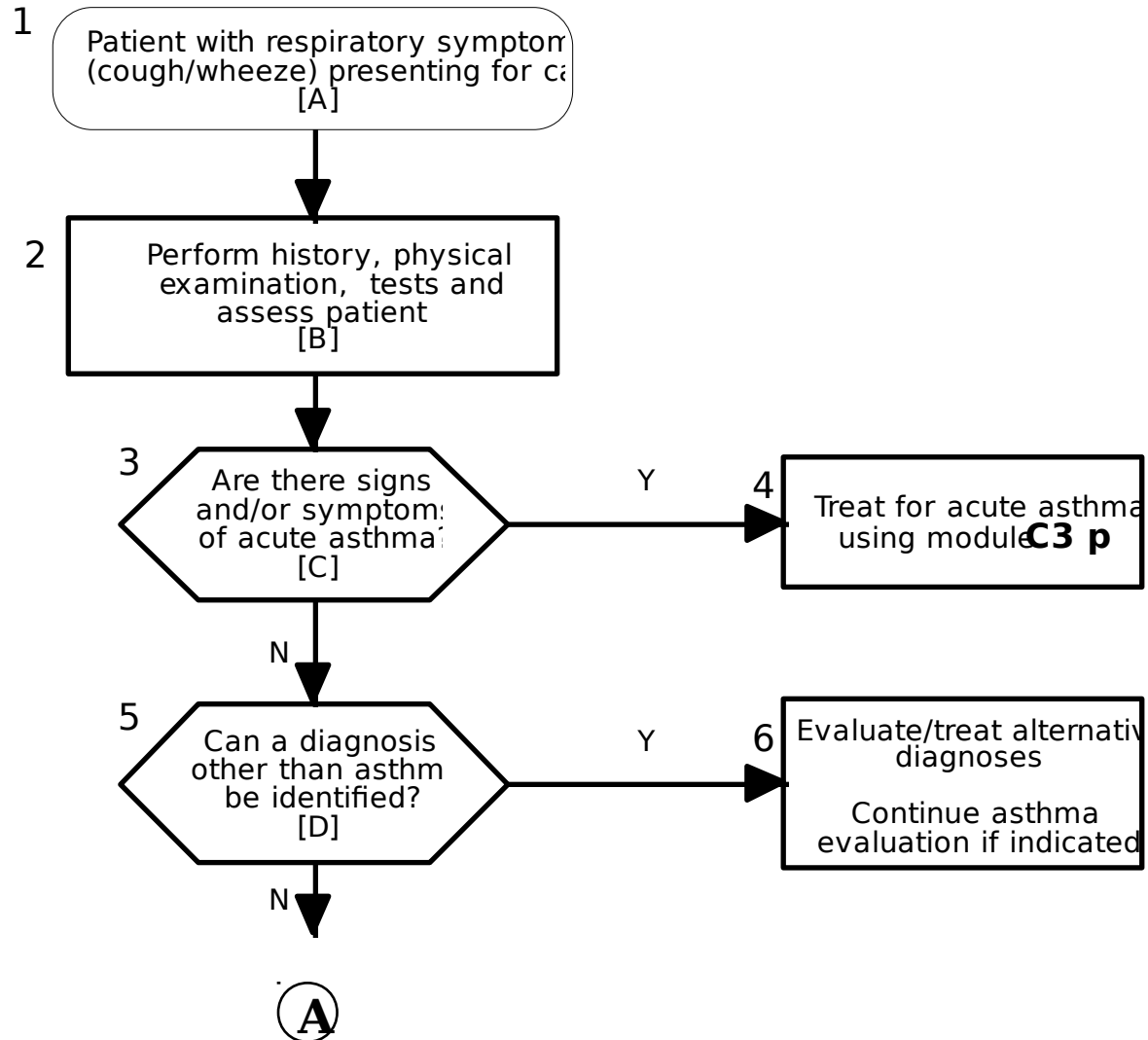
# Development of the Guidelines: Time Course

- Jan-May '99: Small group and e-mail revisions; Public Health Service and Bureau of Prisons join
- May '99: Small group meets to edit the guidelines and complete the tables of evidence
- Aug '99: Region 3 implementation starts

# Asthma Clinical Practice Guidelines: The Format

- A VA guideline format was followed
- The guideline consists of two parts
  - Algorithm - a graphic flow of asthma management
  - Annotation - text explanations of reasoning supporting each “box” in the algorithms
- Guideline
  - Easy to follow; complete management
  - Evidence-based

# Management of Asthma for Children under Six Years: Diagnosis and Initial Management: A1p



# Asthma Diagnosis and Initial Management for Infants and Children Under 6 Years

*Please note that this guideline is designed for children who can perform spirometry. For those children under six-years-old who cannot perform spirometry, consider using the algorithm for Adults and Children 6 years and older (C1 adult)*

## A. (Box) Patient with Respiratory Symptoms (Cough/Whooping Cough) Presenting for Care

**OBJECTIVE** Highlight common presentations of asthma for infants and children

### ANNOTATION

Consider a diagnosis of asthma in the infant or child when there exists:

- Wheezing
- Absence of wheezing doesn't exclude asthma; cough variant asthma is common in childhood
- Prior history of the following:
  - Recurrent bronchiolitis
  - Recurrent bronchitis
  - Chronic cough, especially a persistent night time cough
  - Prolonged respiratory symptoms (greater than 10 days) with concomitant viral infection
  - Recurrent pneumonia

### DISCUSSION

Asthma is under-recognized in children. Consider asthma if any of the following indicators are present. None of these are diagnostic of asthma, but the presence of multiple indicators increases the likelihood of an asthma diagnosis. Asthma is defined by reversible airway obstruction, which can include symptom-free intervals. In young children asthma is primarily diagnosed by physical examination as most children less than 6-years-old cannot perform lung function tests.

1. Wheezing, although a common sign of asthma, may be absent.
2. History of any of the following: cough (especially worse at night or with exercise), wheeze, difficulty in breathing, or chest tightness
3. Symptoms occur or are made worse by: exercise, viral infection, animals or allergens, house-dust mites, mold, smoke, pollen, changes in weather (especially weather changes), emotional expressions, airborne chemicals, or menses. Other atopic disorders such as eczema, allergic rhinitis, recurrent croup, may be present in the patient or



# Support of Evidence

- Level of evidence
- Strength of evidence

# Level of Evidence

- **A** - Randomized controlled trials
- **B** - Well designed clinical and epidemiological studies
- **C** - Panel consensus

# Strength of Recommendation

- **Level I** - Usually indicated, always acceptable. Considered useful and effective (U/E)
- **Level IIa** - Acceptable, uncertain efficacy, weight of evidence in support of U/E
- **Level IIb** - Acceptable, uncertain efficacy, may be helpful, not likely to be harmful
- **Level III** - Not acceptable, uncertain efficacy, possibly harmful (Not in guideline)

# Why an Asthma Guideline?

- Early 1990s
  - Improved knowledge and treatment of asthma
  - Increasing asthma mortality and morbidity
- NHLBI
  - 1991 - Utilized evidence-based care and best practice standards (poor implementation)
  - 1997 - Revised guidelines; asthma morbidity and mortality improved

# DOD/VA Asthma Guidelines: Breakdown

- Patient group
- Evaluation or treatment points

# Two Guidelines Based upon Patient Groups

- Children < 6 years old OR ***those who cannot perform spirometry***
- Older children and adults ***who can perform spirometry***

# Evaluation or Treatment Points

Four separate Algorithms for each patient group

- 1) Diagnosis and initial management
- 2) Treatment follow-up/long-term management
- 3) Emergency management of exacerbations
- 4) Telephone triage/management

# Diagnosis and Initial Management

- Consider asthma in differential diagnosis
  - Different differential diagnosis in young children
    - » consider congenital and structural abnormalities, and cystic fibrosis
- **Use Spirometry**  
(Exception: Children unable to perform spirometry, diagnosed based on history and physical exam)
- Use trial of medication



# Emergency Management

- Initial objective assessment
  - Pulse oximetry (only objective measure in children)
  - Peak flow
    - » note: A room air  $\text{SaO}_2$  of  $< 94\%$  after aggressive treatment is a fair predictor of the need for hospitalization. Different childhood differential diagnosis
- Treat promptly
  - Parenteral corticosteroids and short acting  $\beta_2$  agonist
    - » Children: same meds and almost identical dosing as for older children/adults. Decreased nasal cannula  $\text{O}_2$  flow rates (1-4 L)
- Objectively assess treatment response
- Discharge with appropriate follow-up care and education

# Follow-up Management

- ***Classify asthma severity and treat based upon severity***
  - In young children, severity classification is based solely on signs/symptoms because they can not perform **PFTs**
  - Controller/reliever medical therapy is similar for all age groups
  - Growth suppression only a concern with moderate-high dose inhaled corticosteroids. They are still the treatment of choice
  - LTRAs are not yet approved for children < 6 years old
  - Salmeterol is not FDA approved for these young children, but it has been shown to be safe and effective

# Asthma Severity and Treatment

- Mild Intermittent
  - PRN short acting beta-agonist
- Mild Persistent
  - PRN short acting beta-agonist **AND**
  - Low-dose inhaled steroids **OR**
  - Cromolyn, nedocromil, leukotrienes (LTRAs)

# Asthma Severity and Treatment

- Moderate Persistent
  - PRN short acting beta-agonist **AND**
  - Inhaled low/medium-dose inhaled steroids **AND**
  - Long acting beta<sub>2</sub>-agonist
- Severe
  - PRN short acting beta<sub>2</sub>-agonist **AND**
  - High-dose inhaled steroids **AND**
  - Oral corticosteroids

# Patient Encounter Form (Front)

<b>ASTHMA OUTPATIENT DOCUMENTATION</b> <small>For use of this form see MEDCOM Cir 40-7</small>		TREATMENT FACILITY		DATE
<b>SECTION I - VITAL SIGNS <i>(To be completed by Technician)</i></b>				
Time: _____ Temp: _____ Pulse: _____ Resp: _____ BP: _____ Wt: _____				
Ht: _____ Ht Percentile: _____ <i>(If under 18 on high dose steroids)</i> O <sub>2</sub> Sat: _____ Peak Flow: _____				
<b>SECTION II - PATIENT ASSESSMENT <i>(To be completed by Patient/ Reviewed by Provider)</i></b>				
<b>ASTHMA SEVERITY ASSESSMENT</b>				
<b>RATE THE OCCURRENCE OF THE FOLLOWING</b>	<b>MILD INTERMITTENT</b>	<b>MILD PERSISTENT</b>	<b>MODERATE PERSISTENT</b>	<b>SEVERE</b>
Daytime wheezing, shortness of breath	<input type="checkbox"/> 2 times per week or less	<input type="checkbox"/> Greater than 2 times per week	<input type="checkbox"/> Daily	<input type="checkbox"/> Continually
Night-time wheezing, shortness of breath	<input type="checkbox"/> 2 times per month or less	<input type="checkbox"/> Greater than 2 times per month	<input type="checkbox"/> Greater than 1 time per week	<input type="checkbox"/> Frequent
How often are your physical activities limited by asthma	<input type="checkbox"/> 2 times per week or less	<input type="checkbox"/> Greater than 2 times per week	<input type="checkbox"/> Greater than 2 times per week	<input type="checkbox"/> Frequent
Daily use of albuterol or "rescue drugs"	<input type="checkbox"/> Less than 1 time per week or less than 3 times per month	<input type="checkbox"/> 1 time per week or more	<input type="checkbox"/> 1 time per week or more	<input type="checkbox"/> Frequent
Rate your current peak flow in relation to your best peak flow	<input type="checkbox"/> Greater than 80% of predicted	<input type="checkbox"/> Greater than 80% of predicted	<input type="checkbox"/> Between 60% and 80% of predicted	<input type="checkbox"/> Less than 60% of predicted
In the past month, how many days have you missed work, school, or daycare due to limitation of your physical activities because of your asthma symptoms? _____				
<b>SECTION III - CURRENT MEDICATIONS</b>				
	<b>NUMBER OF PUFFS</b>	<b>HOW OFTEN</b>	<b>DATE LAST USED</b>	<b>DON'T USE</b>
Albuterol - - - - -	_____	_____	_____	_____
Inhaled Steroid - - - - -	_____	_____	_____	_____
Cromolyn, Nedocromil - - - - -	_____	_____	_____	_____
Salmeterol - - - - -	_____	_____	_____	_____
Other - - - - -	_____	_____	_____	_____
Do you have an Asthma Action Plan? <input type="checkbox"/> Yes <input type="checkbox"/> No		Do you use a peak flow meter? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Do you use a spacer or holding chamber? <input type="checkbox"/> Yes <input type="checkbox"/> No		Are you using steroid pills? <input type="checkbox"/> Yes <input type="checkbox"/> No		
		Do you use a nebulizer? <input type="checkbox"/> Yes <input type="checkbox"/> No		
<b>PATIENT'S IDENTIFICATION</b> <i>(For typed or written entries give: Name - last, first, middle; grade; date; hospital or medical facility)</i> <div style="border: 1px solid black; height: 100px; width: 100%; margin-top: 10px;"></div>				
_____ <i>(Patient's Signature)</i>				

# Patient Encounter Form (Back)

SECTION IV - PHYSICAL ASSESSMENT <i>(to be completed by Provider)</i>		
HEENT, Lungs, and CV:		
SECTION V - ASSESSMENT AND PLAN		
SYMPTOMS	MEDICATIONS	ACTUAL MEDICATION AND DOSE
<input type="checkbox"/> Mild Intermittent	<input type="checkbox"/> Inhaled short-acting beta-agonist <b>PRN</b> <input type="checkbox"/> Other	_____ _____
<input type="checkbox"/> Mild Persistent	<input type="checkbox"/> Inhaled short-acting beta-agonist <b>PRN</b> <b>AND</b> <input type="checkbox"/> Low-dose inhaled corticosteroid <b>OR</b> <input type="checkbox"/> Cromolyn/Nedocromil/Leukotriene modifier	_____ _____ _____
<input type="checkbox"/> Moderate Persistent	<input type="checkbox"/> Inhaled short-acting beta-agonist <b>PRN</b> <b>AND</b> <input type="checkbox"/> Inhaled low/medium dose corticosteroid <input type="checkbox"/> Inhaled long-acting beta-agonist <input type="checkbox"/> Other	_____ _____ _____ _____
<input type="checkbox"/> Severe	<input type="checkbox"/> Inhaled short-acting beta-agonist <b>PRN</b> <b>AND</b> <input type="checkbox"/> Inhaled high dose corticosteroid <input type="checkbox"/> Inhaled long-acting beta-agonist <input type="checkbox"/> Other (oral steroids)	_____ _____ _____ _____
Has patient needed referral to specialty care? <input type="checkbox"/> Yes <input type="checkbox"/> No    Date referred to specialty care: _____		
Written Action Plan given to patient/Copy placed in chart? <input type="checkbox"/> Yes <input type="checkbox"/> No    Date/Update: _____		
Height compared against growth chart (patients under 18 on high dose steroids) <input type="checkbox"/> Yes <input type="checkbox"/> No		
Bone-Density test ordered every 1 year or as clinically indicated (adults on high dose steroids)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Environmental triggers avoidance/control reviewed? <input type="checkbox"/> Yes <input type="checkbox"/> No    Date: _____		
<input type="checkbox"/> Exercise <input type="checkbox"/> URIs <input type="checkbox"/> Weather/Cold Air	<input type="checkbox"/> Weather/Dry Air <input type="checkbox"/> Dust <input type="checkbox"/> Stress	<input type="checkbox"/> Pollen <input type="checkbox"/> Smoke/Fumes <input type="checkbox"/> Pets <input type="checkbox"/> Mold <input type="checkbox"/> Roaches <input type="checkbox"/> Other: _____
Immunizations: <input type="checkbox"/> Flu <input type="checkbox"/> Pneumovax (adult)		
Asthma education or peak flow meter education required? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Follow-up: _____		
Asthma Master Problem List initiated or reviewed and updated? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Other medication/treatment given:		
_____ <i>(Healthcare Provider's Signature)</i>		_____ <i>(Date/Time)</i>

# Cost of Adult Asthma Drugs at Eisenhower AMC

<u>Drug</u>	<u>Low Dose</u>	<u>Medium Dose</u>
<u>High Dose</u>		
Beclomethasone dipropionate >840 mcg	168-504 mcg	504-840 mcg
42 mcg/puff >\$0.58 /day	\$0.11 to 0.34 /day	\$0.34 to 0.58 /day
84 mcg/puff >\$0.57 /day	\$0.11 to 0.34 /day	\$0.34 to 0.57 /day
Budesonide Turbuhaler >600 mcg	200-400 mcg	400-600 mcg
200 mcg/inhalation >\$1.00 /day	\$0.33 to 0.66 /day	\$0.66 to 1.00 /day
Flunisolide >2000 mcg	500-1000 mcg	1000-2000 mcg
250 mcg/puff >\$0.22 /day	\$0.06 to 0.11 /day	\$0.11 to 0.22 /day

Fluticasone  
>660 mcg

88-264 mcg

264-660 mcg

# Cost of Children's Asthma Drugs at Eisenhower AMC

<u>Drug</u>	<u>Low Dose</u>	<u>Medium Dose</u>
<u>High Dose</u>		
Beclomethasone dipropionate	84-336 mcg	336-672 mcg
>672 mcg		
42 mcg/puff	\$0.06 to 0.23 /day	\$0.23 to 0.45 /day
>\$0.45 /day		
Budesonide Turbuhaler	100-200 mcg	200-400 mcg
>400 mcg		\$0.33 to 0.66 /day
>\$0.66 /day		
Flunisolide	500-750 mcg	1000-1250 mcg
>1250 mcg		
250 mcg/puff	\$0.06 to 0.08 /day	\$0.11 to 0.14 /day
>\$0.14 /day		
Fluticasone	88-176 mcg	176-440 mcg
>440 mcg		
MDI: 44 mcg/puff	\$0.23 to 0.45 /day	\$0.45 to 1.13 /day
MDI: 110 mcg/puff		\$0.36 to 0.72 /day



# Follow-up Management (cont.)

- Educate patient on self-management
  - Inhaler/spacer use problematic, but spacers and spacer/face mask can be used successfully with proper instruction
- Provide written action plan
- Preventive care and trigger avoidance
  - Allergies - less important role in asthma in children < 4yo; Skin or RAST testing rarely indicated in children < 3yo
  - URIs - the most common asthma trigger in infants and toddlers
- Regular follow-up with assigned PCM

# Asthma Action Plan

<b>ASTHMA ACTION PLAN</b> <small>For use of this form see MEDCOM Cir 40-7</small>													
<b>PATIENT IDENTIFICATION</b>	<div style="border: 1px solid black; padding: 5px;"> <b>GREEN ZONE: Doing Well</b>  <ul style="list-style-type: none"> <li>• No cough, wheeze, chest tightness, or shortness of breath during the day or night.</li> <li>• Can do usual activities</li> </ul>                     And if a peak flow meter is used, peak flow more than _____  <i>(80% or more of my best peak flow)</i>                      My best peak flow is: _____                 </div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <b>Take these Long-Term-Control Medicines each day (Includes an anti-inflammatory)</b> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Medicine</th> <th style="width: 25%; text-align: center;">How much to take</th> <th style="width: 25%; text-align: center;">When to take it</th> </tr> </thead> <tbody> <tr><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td><td>_____</td></tr> </tbody> </table> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;">                     Before exercise - - - - - <input type="checkbox"/> _____ <input type="checkbox"/> 2 or <input type="checkbox"/> 4 puffs, 5 to 60 minutes before exercise                 </div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <b>YELLOW ZONE: Asthma is Getting Worse</b> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <ul style="list-style-type: none"> <li>• Cough, wheeze, chest tightness, or shortness of breath or</li> <li>• Waking at night due to asthma, or</li> <li>• Can do some, but not all, usual activities</li> </ul> <p style="text-align: center;">- OR -</p>                     Peak flow: _____ to _____  <i>(60% - 80% of my best peak flow)</i> </div> <div style="width: 50%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> <b>1st</b> → Add: Quick-Relief Medicine and keep taking your GREEN ZONE medicine                             </div> <div style="border: 1px solid black; padding: 2px;"> <b>2nd</b> → If symptoms (and peak flow, if used) <u>return</u> to GREEN ZONE after 1 hr of above treatment:                                     <div style="margin-top: 5px;"> <input type="checkbox"/> Take the quick-relief medicine every 4 hours for 1 to 2 days.  <input type="checkbox"/> Double the dose of your inhaled steroid for _____ (7-10) days.                                     </div> </div> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 45%;"> <p style="text-align: center;">- OR -</p>                     If symptoms (and peak flow, if used) <u>do not return</u> to GREEN ZONE after 1 hour of above treatment:                     <div style="margin-top: 5px;"> <input type="checkbox"/> Take _____ (short acting beta-agonist) <input type="checkbox"/> 2 or <input type="checkbox"/> 4 puffs or <input type="checkbox"/> Nebulizer  <input type="checkbox"/> Add _____ mg. per day for _____ (3-10) days. (oral steroid)  <input type="checkbox"/> Call your Healthcare Provider within _____ hours after taking the oral steroid.                     </div> </div> <div style="width: 50%;"></div> </div> </div>	Medicine	How much to take	When to take it	_____	_____	_____	_____	_____	_____	_____	_____	_____
Medicine	How much to take	When to take it											
_____	_____	_____											
_____	_____	_____											
_____	_____	_____											
<b>HEALTHCARE PROVIDER'S NAME:</b>  <b>HEALTHCARE PROVIDER'S PHONE #</b>  <b>HOSPITAL/EMERGENCY ROOM PHONE #</b>  I have read, understand, and have been given a copy of this Action Plan.	<div style="border: 1px solid black; padding: 5px;"> <b>RED ZONE: Medical Alert!</b>  <ul style="list-style-type: none"> <li>• Very short of breath, or</li> <li>• Quick-relief medicines have not helped, or</li> <li>• Cannot do usual activities, or</li> <li>• Symptoms are same or get worse after 24 hours in Yellow Zone</li> </ul> <p style="text-align: center;">- OR -</p>                     Peak flow is less than: _____  <i>(&lt; 60% of my best peak flow)</i> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <b>Take this medicine:</b> <div style="margin-top: 5px;"> <input type="checkbox"/> _____ (short acting beta-agonist) <input type="checkbox"/> 4 or <input type="checkbox"/> 6 puffs or <input type="checkbox"/> Nebulizer  <input type="checkbox"/> _____ mg. (oral steroid)                             </div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <b>Then call your Healthcare Provider - NOW!</b> Go to the hospital or call for an ambulance if:                     <div style="margin-top: 5px;"> <input type="checkbox"/> You are still in the red zone after 15 minutes and using your nebulizer AND  <input type="checkbox"/> You have not reached your Healthcare Provider                     </div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <b>DANGER SIGNS!</b> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;"> <b>!!!!</b> </div> <div>                         Take <input type="checkbox"/> 4 or <input type="checkbox"/> 6 puffs of your quick-relief medicine AND                          Go to the hospital or call for an ambulance _____ <b>NOW!</b> </div> </div> <ul style="list-style-type: none"> <li>• Trouble walking/talking due to shortness of breath</li> <li>• Lips or fingernails are blue</li> </ul> </div>												

# Clinical Practice Guidelines

## Why implement them?

- **When used**, guidelines help standardize and improve care, decrease cost, and increase patient satisfaction
- Good teaching tools
- Standardize care across a wide variety of care providers, facilities, and agencies
- JCAHO requirement - specific standards of disease management

# Clinical Practice Guidelines Implementation Strategies

- Encouraging providers to follow guidelines is much like trying to get a patient to take medication; adherence can be improved by education and wise implementation
- The *BEST* implementation strategy is not known
- Constant reinforcement/encouragement will be necessary
  - *What gets measured gets done!*
- Simplify the guidelines - emphasize key points

# Recommended Metrics

- % asthma follow-up visits with asthma severity level documented
- % patients with persistent asthma who are prescribed long-term controller medications
- % persistent asthmatics with written action plan documented in past 12 months
- % asthmatics 6 years old and over with spirometry in past 12 months

# Successful Implementation

- Local needs assessment
- Small scale test
  - PDSA (Plan, Do, Study, Act)
  - Show providers that the guidelines make their lives easier and not more difficult
  - Asthma toolkit
    - » encounter/clinic sheets, educational materials, spirometers, easy access to spacers, proper meds
- **Facilitate multi-disciplinary approach**

# Adherence to Guidelines: Monitoring Their Use is Important

- Reinforces guideline use by monitoring
- Makes providers accountable for their care
- Gives providers feedback concerning their practice performance on a regular basis

# Real Success

- Improved
  - Patient quality of life
  - Patient satisfaction
- Decreased
  - Admissions and emergency visits
  - Morbidity and mortality
  - Cost is NOT the issue; *if the highest quality evidence-based care is provided, cost will take care of itself.*



The *existence* of a  
guideline  
*does not*  
improve health care,  
but how it is  
***IMPLEMENTED***  
*can.*

# Case Studies

- Take the Algorithms out for a trial
- Walk patients through the guidelines
- Every scenario will not be covered but the most commonly encountered ones will be

# For more information:

Access the MEDCOM QM website at:

<http://www.cs.amedd.army.mil/Qmo>